allow for effective pedaling performance when climbing hills and traversing non-technical terrain. Seat **34** also needs to be lowered substantially (usually by 4-8 inches or more depending on the rider's height and body proportions) so that the rider can safely and effectively traverse difficult or challenging terrain and obstacles, for example during aggressive freeriding. In particular, it is desirable to move seat **34** to a lower forward position so that it does not interfere with preferred downhill riding positions (when traversing steep downhill slopes or other challenging terrain, it is often desirable for the rider's "bottom" to be lowered and moved rearwardly to alter the rider's center of gravity).

As shown in FIG. **6**, a "region of biomechanical efficiency" is shown in hatched lines which denotes a preferred range of positions of seat tube **26** (and hence seat **34**). In this example, the bottom boundary of the region is the longitudinal axis of frame top tube **22**; the front boundary of the region is a line that is 5° from a vertical plane passing through the axis of bottom bracket **35** and **850** from a horizontal plane centered on the bottom bracket axis; the rear boundary is of the region is a line that is 30° from a vertical plane passing through the axis of bottom bracket 35° and 60° from a horizontal plane centered on the bottom bracket axis; and the top boundary is a line formed by the intersection of the plane of the bicycle front frame and a horizontal plane which includes a point defined by the intersection of the longitudinal axes of top tube **22** and head tube **28**.

As should be apparent from FIG. **6**, it is important that the longitudinal axis of seat tube **26** extend within the region of biomechanical efficiency at a location that does not interfere with rear wheel **14** or rear suspension **40** when such components are in their most forward position (i.e., when rear shock absorber **42** is under full compression). As explained above, the position of seat **34** is largely determined by the angle of seat tube **26** (although seat **34** may be adjustable forwardly and rearwardly to a limited extent on rails (not shown) mounted on the top of seat post **32**). Further, the actual position of seat **34** may be above the above-defined region of biomechanical efficiency, especially when seat **34** is in the most raised position for hill climbing, but the longitudinal axis of seat tube **26** preferably extends through this region. In the illustrated embodiment the longitudinal axis of seat tube **26** extends at an angle of about 58° relative to a horizontal plane (as defined above). Since the longitudinal axis of seat tube **26** is not coincident with the axis of bottom bracket **35**, but is instead offset forwardly as described above, this corresponds to an effective seat tube angle of about 72° relative to the horizontal plane as measured from bottom bracket **35** (which support's the bicycle pedals). In one embodiment of the invention, the preferred actual angular range of seat tube **26** as measured above is between about 50-70° which corresponds to a preferred effective angular range of between about 60-85° as measured above. If the longitudinal axis of seat tube **26** is too sharply inclined (e.g., having an actual angle less than about 45° relative to a horizontal plane), this may result in rear suspension **40** contacting seat tube **26**, seat post **32** or seat **34** when rear suspension **40** is in its most forwardly intrusive position, particularly in the case of long travel rear suspension systems. Further, such a sharply inclined seat tube **26** would restrict the amount of space available forward of seat tube **26** to accommodate rear shock absorber **42**. Conversely, if the orientation is overly upright (e.g., if the longitudinal axis of seat tube **26** extends at an actual angle more than about 75° degrees relative to a horizontal plane), then the rider will not be an optimum biomechanical position for uphill pedaling.

As explained above, the principles of the present invention may apply to many alternative bicycle configurations, including bicycles having different frame **18** and/or rear suspension **40** configurations. Some examples of alternative arrangements are shown schematically in FIGS. **6-10**. FIG. **6-7** illustrates schematically the embodiment of FIGS. **3-5** where linkage **44** is driven by rocker arm link **50** (FIG. **6** showing this configuration in a compressed configuration and FIG. **7** showing the same configuration in an uncompressed configuration).

FIG. **8** illustrates an alternative arrangement where linkage **44** is driven by chain stay link **46**. In particular, instead of coupling linkage **44** to rocker arm **50**, pivot **102** is located rearwardly of rocker arm **50** and is coupled by means of linkages **110** and **112** to pivots **56** and **62** located on opposite ends of chain stay link.

FIG. **9** illustrates a further alternative arrangement where linkage **44** is driven by a single pivot suspension system employing a longer swing arm (i.e., chain stay link **46**). In this arrangement rear wheel **14** is mounted at a fixed location on chain stay link **46** which is in turn connected directly to pivot **54**. In this embodiment pivot **62** is positioned at one end of seat stay link **48** and linkage **44** is driven by a combination of rocker link **50** and seat stay link **48**.

FIG. **10** illustrates a walking beam four bar linkage utilizing the invention. In this case a modified walking beam linkage **114** extends between an upper end of seat stay link **48** and a pivot **116** mounted on seat tube **26**. Linkage **44** employs a push linkage **96** having one end pivotably coupled to walking beam linkage **114** by means of a pivot **115** and another end coupled to triangular a A-links **116** fixed to frame **18**. At least one segment of A-links **116** intersects a plane parallel to the longitudinal axis of seat tube **26** to couple push linkage **96** to shock absorber **42**. As in other embodiments of the invention, linkage **44** functions as an intermediate coupling for transferring rear suspension forces around seat tube **26** to shock absorber **42** located at a position forwardly of seat tube **26**.

As will be appreciated by a person skilled in the art, many other alternative variations of linkage **44** may be envisioned for use in association with different rear suspension designs.

As will be apparent to those skilled in the art in the light of the foregoing disclosure, many alterations and modifications are possible in the practice of this invention without departing from the spirit or scope thereof. Accordingly, the scope of the invention is to be construed in accordance with the substance defined by the following claims.

What is claimed is:

1. A bicycle having a rear wheel, said bicycle comprising:

(a) a frame orientable in a vertical plane, said frame comprising a top tube, a down tube having a bottom bracket at a bottom end thereof for receiving a pedal assembly, and a seat tube coupled to said top tube and configured for receiving a seat post within an upper portion of said seat tube;

(b) a rear suspension for pivotably coupling said rear wheel to said frame;

(c) a rear shock absorber mounted on said frame; and

(d) a linkage pivotably mounted on said frame for coupling said rear suspension to said shock absorber for controlling the wheel path of said rear wheel,

wherein said upper portion of said seat tube comprises a linear tubular sleeve having an opening at an uppermost end thereof for receiving said seat post